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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/517,322

12/15/2005

Per Mansson

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BACON & THOMAS, PLLC

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FOURTH FLOOR

ALEXANDRIA, VA 22314-1176

EXAMINER

YU, MELANIE J

ART UNIT

PAPER NUMBER

1641

MAIL DATE

DELIVERY MODE

07/31/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/517,322	Applicant(s) MANSSON ET AL.	
	Examiner MELANIE YU	Art Unit 1641	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 April 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 and 8-11 is/are pending in the application.
- 4a) Of the above claim(s) 8-11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 December 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>12/20/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of group I, claims 1-6, in the reply filed on 28 April 2008 is acknowledged. The traversal is on the ground(s) that Miura et al. do not teach the linker molecule having an aliphatic hydrocarbon chain of 1, 2 or 3 carbon atoms and therefore the solid support has a special technical feature over the prior art. This is not found persuasive because the method of claim 8 does not specifically require the solid support of claim 1 because the claim recites that "if necessary" the support may be activated, therefore the common features between the solid support and the method of group II, as detailed in the restriction requirement dated 26 March 2008, do not share a special technical feature over the prior art.

The requirement is still deemed proper and is therefore made FINAL.

Claim Objections

2. Claim 5 is objected to because of the following informalities: in the last line of the claim the term in parenthesis appears to be a typographical error and the generic term should be corrected. Appropriate correction is required.

Information Disclosure Statement

3. The references indicated with a strike-through in the information disclosure statement filed 20 December 2004 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that

portion which caused it to be listed. It has been placed in the application file, but the indicated information referred to therein has not been considered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
4. Claims 1-3, 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miura et al. (US 2002/0009812) in view of Jacobs et al. (US 6,905,816) further in view of Tao et al. (US 2002/0121314).

Miura et al. teach a coated metal surface on a solid support (thin metal film formed on a prism support, par. 6); the coating consisting of a protein layer firmly attached to the metal surface (BSA, par. 22 and 43) and the protein layer coupled to linker molecules that are bound to low molecular weight antigens (par. 22 and 50; antigens are low molecular weight, par. 41), wherein the linker molecules are coupled to the protein layer and are bound to the antigen (par. 105-110), but fail to teach the linker

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specifically having functional end groups attached to the protein and the antigen and the linker between the functional end groups having an aliphatic hydrocarbon chain of 1, 2 or 3 carbon atoms.

Jacobs et al. teach a protein layer on a substrate surface (BSA coating, col. 16, lines 26-40 and 53-67) linker having functional end groups (NHS-Y-NHS connects amine surface with amine-group containing molecule, col. 17, lines 5-15, Jacobs et al. does not specify with the connecting linker Y is), in order to provide an easy and low cost alternative to providing a number of tests.

Tao et al. teach a protein immobilized directly on a metal substrate (par. 158) and the proteins being capture ligands (par. 155) that bind indirectly to a ligand through capture extender ligands (par. 153), wherein the extender ligands are homo or hetero attachment linkers wherein the linker between the functional end groups is ethylene glycol or a short alkyl group which are aliphatic hydrocarbon chain with 2 and 1 carbon atoms, respectively (par. 156; target sequence attaches to capture probe via attachment linker, par. 12 and 13), in order to provide indirect attachment of the target analyte to a capture ligand.

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to include as the linker on the solid support of Miura et al., a bifunctional linker having two functional end groups as taught by Jacobs et al., in order to easily attach an antigen to a substrate having a protein by converting the chemical reactivity of the substrate surface. It would have further been obvious to one having ordinary skill in the art to include as the linker between bi-functional end groups

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of Miura et al. in view of Jacobs et al., an ethylene glycol or short alkyl group that each of which has an aliphatic hydrocarbon chain encompassed by the recited 1, 2 or 3 carbon atoms as taught by Tao et al., in order to provide a short linker that avoids perturbations in a binding ligand.

Regarding claim 2, Miura et al. teach the metal selected from gold, silver, aluminum and nickel (par. 48).

With respect to claims 3 and 5, Miura et al. teach the same antigens bound to the same protein layer (Fig. 13; par. 79 and 80) and the antigen being a narcotic that is cocaine or methamphetamine (par. 41).

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miura et al. (US 2002/0009812) in view of Jacobs et al. (US 6,905,816) further in view of Tao et al. (US 2002/0121314), as applied to claim 1, further in view of Houser et al. (US 2003/0162987).

Miura et al. in view of Jacobs et al. further in view of Tao et al. teach a coated metal surface having a protein layer and an antigen that is a narcotic, but fail to teach the antigen being an explosive.

Houser et al. teach a surface plasmon resonance assay wherein a quartz slide is coated with metal (par. 50) and a sensing film is coated on the metal coated glass slide (par. 16), wherein TNT is the detected antigen (par. 14), in order to provide accurate detection of an explosive in a sample.

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to include as an antigen in the device of Miura et al. in

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view of Jacobs et al. further in view of Tao et al., an antigen that is TNT as taught by Houser et al., in order to provide detection of a toxic explosive in a sample (par. 14).

Conclusion

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MELANIE YU whose telephone number is (571)272-2933. The examiner can normally be reached on M-F 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Shibuya can be reached on (571) 272-0806. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Melanie Yu/
Patent Examiner, Art Unit 1641